Hyunjoon Kim

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RESEARCH INTERESTS

Big Data Analysis, Graph Database, Graph Query Processing, Graph Neural Networks, Algorithms & Data Structures

EDUCATION

Seoul National University, Seoul, Korea   *Sep. 2013 - Present*
Ph.D. Student in Computer Science and Engineering
Thesis: Fast Graph Query Processing Algorithms Using Dynamic Programming
Advisor: Prof. Kunsoo Park

Seoul National University, Seoul, Korea   *Mar. 2009 - Feb. 2013*
B.S. in Computer Science and Engineering
Graduated with honors (*Summa Cum Laude*)

SKILLS

Programming Languages. C/C++, Python, Java, Matlab, R

Frameworks/Libraries. TensorFlow, Android SDK, OpenMP, Hadoop

Others. Git

PUBLICATIONS

Hyunjoon Kim, Seunghwan Min, Kunsoo Park, Xuemin Lin, Seok-Hee Hong, and Wook-Shin Han. "IDAR: Fast Supergraph Search Using DAG Integration." Proceedings of the VLDB Endowment, 13(9):1456-1468, 2020.

Hyunjoon Kim, Yunyoung Choi, Kunsoo Park, Xuemin Lin, Seok-Hee Hong, and Wook-Shin Han. "Fast Subgraph Query Processing and Subgraph Matching." work in progress.

Seongi Hong, Geonmo Gu, **Hyunjoon Kim**, and Kunsoo Park. "Performance Comparison of Adaptive Matching Orders for the Subgraph Isomorphism Problem." Journal of Korean Institute of Information Scientists and Engineers (KIISE), 26(1):38-43, 2020.

Myoungji Han, **Hyunjoon Kim**, Geonmo Gu, Kunsoo Park, and Wook-Shin Han. "Efficient Subgraph Matching: Harmonizing Dynamic Programming, Adaptive Matching Order, and Failing Set Together." In Proceedings of the International Conference on Management of Data (ACM SIGMOD), pp. 1429-1446, 2019.

Joong Chae Na, **Hyunjoon Kim**, Seunghwan Min, Heejin Park, Thierry Lecroq, Martine Léonard, Laurent Mouchard, and Kunsoo Park. "FM-index of Alignment with Gaps." Theoretical Computer Science, 710:148-157, 2018.

Joong Chae Na, **Hyunjoon Kim**, Heejin Park, Thierry Lecroq, Martine Léonard, Laurent Mouchard, and Kunsoo Park. "FM-index of Alignment: A Compressed Index for Similar Strings." Theoretical Computer Science, 638:159-170, 2016.

Myoungji Han, Jihyuk Lim, Junyoung Choi, **Hyunjoon Kim**, Jeongjoo Seo, Cheol Yu, Sung-Ryul Kim, and Kunsoo Park. "A Malicious Traffic Detection Method Using X-means Clustering." Journal of Korean Institute of Information Scientists and Engineers (KIISE), 41(9):617-624, 2014.

PROJECTS

Framework of Practical Algorithms for NP-hard Graph Problems   Apr. 2018 - Present
· Designed and implemented graph query processing algorithms which outperform existing algorithms by up to several orders of magnitude.
· Published two top-tier conference papers.

Chinese Character Input System   Oct. 2015 - Sep. 2018
· Developed Chinese characters typing software for Android, and obtained two U.S. patents.

Multi-omics Analysis Algorithms and Platforms   Oct. 2014 - Dec. 2016
· Developed a compressed and searchable index FMA for similar strings.
· For genome sequences from the 1000 Genomes Project, index size of FMA is less than one third of that of an existing method while pattern search of FMA is faster.

Response Technologies against Multiple Device-Channel Attack in Future Complex Computing Environments   Dec. 2013 - Dec. 2014
· Developed a malicious traffic detection method on DARPA 2000 Dataset and ISOT Botnet Dataset.

PATENTS

Kunsoo Park, Hyunjoon Kim, and Hyun-Kyung Noh. "Keyboard for typing chinese character." U.S. Patent Application 16/134,734, filed March 21, 2019.

Hyun-Kyung Noh, Kunsoo Park, and Hyunjoon Kim. "Chinese character input apparatus and controlling method thereof." U.S. Patent Application 16/028,832, filed January 10, 2019.

EXPERIENCE

Computer Theory and Application Lab., Seoul National University   Sep. 2013 - Current
Ph.D. Student

Mentor in Samsung Convergence Software Course (SCSC)   Aug. 2015 - Jun. 2016
· Motivated undergraduate students, and assisted them in reviewing CSE courses.

Teaching Assistant
· 4190.407 Algorithms, Seoul National University   Mar. 2014 - Jun. 2014
· 4190.306 Automata theory, Seoul National University   Sep. 2015 - Dec. 2015

Distributed Computing Systems Lab., Seoul National University   Feb. 2013 - Mar. 2013
Research Intern

HONORS

Hyunsong Educational & Cultural Foundation Scholarship   Mar. 2010 - Dec. 2012

Seongnam City Scholarship   Sep. 2009 - Dec. 2009